

REMARKS

Claims 1 and 3-14 are pending in this application, of which claims 1 and 12 are independent.¹ Favorable reconsideration and further examination in view of the foregoing amendments and following remarks.

Initially, claims 1, 9 and 12 were rejected for alleged indefiniteness for using the word "substantially". For example, it was said on page 2 of the Office Action that "it is unclear how 'substantially identical' the channel measurement burst structure is to the data burst structure. It is also unclear how 'substantially constant' the power levels are and how 'substantially' the channel measurement sequence are sent at the same time". Applicant respectfully submits that, once armed with the disclosure of the subject application, and the knowledge generally available in the art, one of ordinary skill would know what was meant by "substantially" in each of those cases. In this regard, courts have specifically sanctioned use of "relative terminology", such as "substantially", in such circumstances. This is explained in MPEP sections 2173.05(b) and 2173.05(b)(D), which are reproduced below:

The fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph. *Seattle Box Co., v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification.²

The term "substantially" is often used in conjunction with another term to describe a particular characteristic of the claimed invention. It is a broad term. *In re Nehrenberg*, 280 F.2d 161, 126 USPQ 383 (CCPA 1960). The court held that the limitation "to substantially increase the efficiency of the compound as a copper extractant" was definite in view of the general guidelines contained in the specification. *In re Mattison*, 509 F.2d 563, 184 USPQ 484 (CCPA 1975). The court held that the limitation "which produces substantially equal E and H plane illumination patterns" was definite because one of ordinary skill in the art would know what was meant by

¹ The Examiner is urged to independently confirm this recitation of the pending claims.

² 2173.05(b)

"substantially equal." *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988).³

In view of the foregoing, Applicant submits that the claims are not indefinite, and respectfully requests removal of the indefiniteness rejection.

Turning to the art rejections, claims 1, 3, 4, 8, 11 and 12 were rejected over U.S. Patent No. 5,583,870 (Delprat) in view of U.S. Patent No. 5,983,101 (Billstrom) and U.S. Patent No. 6,125,125 (Narasimha); claims 5 to 7 were rejected over Delprat, Billstrom and Narasimha in view of U.S. Patent No. 5,274,669 (Klank); claims 9 and 10 were rejected over Delprat, Billstrom and Narasimha in view of U.S. Patent No. 4,577,334 (Boer); and claims 13 and 14 were rejected over Delprat, Billstrom and Narasimha in view of U.S. Patent No. 5,598,404 (Hayashi). As shown above, Applicant has amended the claims; however, these amendments were made to improve the claims' clarity, and not to overcome the art rejections. Accordingly, this should be viewed as a traversal of the foregoing rejections.

Amended independent claim 1 defines a method of measuring transmission characteristics of radio channels in a radio communications system having base stations and a radio station. The radio communications system utilizes a timeslot structure in a time frame for transmitting data. The method comprises transmitting the data as data bursts from one of the base stations to the radio station, where each of the data bursts has a channel measurement sequence. The base stations transmit channel measurement sequences as bursts having structure that is substantially identical to structure of the data bursts. Each channel measurement sequence is transmitted in at least one timeslot in which no data is transmitted to the radio station. The

³ 2173.05(b)(D)

base stations transmit channel measurement sequences at substantially constant power levels and at substantially a same time.

The applied art is not understood to disclose or to suggest the foregoing features of claim 1, particularly with respect to the base stations transmitting channel measurement sequences at substantially constant power levels *and* at substantially a same time.

In this regard, page 4 of the Office Action admits that Delprat does not disclose that base stations transmit channel measurement sequences at substantially constant power levels, and page 5 of the Office Action admits that Delprat does not disclose that the base stations transmit channel measurement sequences at the same time.

Billstrom was cited for its disclosure of base stations transmitting at a constant power level. In this regard, as noted in the Office Action, Billstrom describes transmission from base stations to a subscriber terminal at a constant power density. In particular, Billstrom states:

At step 400 a base station's transmit power density (i.e. power transmitted per Hz bandwidth) is selected to be constant for all bitrates and modulation types. This implies that all bitrates transmitted with one specific modulation type have the same range. However a more bandwidth effective modulation type will have a shorter range since it will be less robust [require a higher signal to noise ratio C/N or signal to noise and interference ratio $C/(N+I)$].⁴

As described in the summary section of Billstrom:

A determination is then made, for each of the plurality of subscriber terminals, whether at the subscriber terminal there is an acceptable signal quality. If not, a next lower modulation type is allocated to the radio link corresponding to the subscriber terminal which does not have the acceptable signal quality.⁵

⁴ Col. 5, lines 57 to 64

⁵ Col. 2, lines 19 to 24

Thus, Billstrom is directed to ensuring appropriate signal quality between each base station and subscriber terminal. As stated in Billstrom:

Thus, the present invention advantageously provides a simple method to allocate modulation type, power strategy and bandwidth to each radio link in a point to multipoint system including the feature of allowing for various modulation types, considering the required coverage range, the minimum bandwidth requirement and the foreseen interference situation.⁶

Narashima was cited for its disclosure of transmitting channel measurement sequences at the same time. In this regard, Narashima describes synchronizing base transceiver stations (BTS) in a TDMA network with respect to a particular time source in order to "cause a particular event in each frame to be transmitted on the network to occur as close as possible to a preordained time".⁷ As described in Narashima:

Thus, at each BTS 14 within the network 10, the frame would be transmitted simultaneously for all channels, thereby providing synchronization. While with most protocols, a number of frames will occur between the GPS timing pulses, the local clock of the BTS 14 is reasonably accurate enough so that synchronization will be maintained throughout the network 10.⁸

Narashima does this in order to ensure that data from multiple BSTs reaches a mobile unit 16 at about the same time, as described in the following excerpt:

As a result, for example, for all of the BTS's 32 that have such a synchronizing mechanism, as shown in FIG. 2B, the training sequences 24a,b (and the rest of the various corresponding parts of the frames) from all transmitters operating on the same channel will be received by the mobile unit 16 at virtually the same time.⁹

It was said in the Office Action that it would have been obvious to combine Billstrom and Narashima (along with Delprat) to arrive at the invention of claim 1. Applicant disagrees. More

⁶ Col. 9, lines 17 to 23

⁷ Col. 3, lines 36 to 38

⁸ Col. 3, lines 43 to 49

⁹ Col. 4, line 63 to col. 5, line 1

specifically, Billstrom is directed to ensuring that acceptable signal quality is present by identifying the signal quality and, if it is not acceptable, selecting a lower modulation type. However, Billstrom does not disclose or suggest that improved signal quality can be achieved by applying some sort of synchronization, much less synchronization as described in Narashima.

Furthermore, Narashima and Delprat relate to transmission of different base stations to mobile devices. In these systems, it may be advantageous that base stations transmit data at a same time in order "to ease handoff procedures", as suggested by the Examiner on page 5. By contrast, Billstrom describes data transmission between base stations and stationary subscriber terminals. This is stated in Billstrom, as follows

Terminals are located at premises of customers, with each terminal being connected by lines (e.g., POTS or ISDN lines) to many telephone subscribers. Each terminal is dedicated and adjusted to one base station (e.g., terminal T1 is dedicated to base station B1-4).¹⁰

Interference can arise in Billstrom due to the configuration of the network, e.g., the location of an additional base station too near to a subscriber terminal, as explained below:

Although there are several terminals within each sector, for a given sector each terminal T is allocated its individual frequency from a range of frequencies available in that sector. It can occur that the same frequency is being utilized both in sector S4_{C1}, and S4_{C2}. Thus, if terminals T1 and T2 were assigned the same frequency, a potential interference problem would arise. In this regard, a signal transmitted on a frequency f1 to terminal T1 from base station B1-4 at site B1 would, due to the wide antenna angle of base station B1-4, also hit the terminal T2 as indicated by line 30. If terminal T2 is also using frequency f1, interference would result. Thus, base station B1-4 could cause interference at terminal T2.¹¹

Ensuring that all base stations transmit data at the same time, as in Narashima, could increase the amount of interference experienced in the Billstrom network, thereby exacerbating the problem that Billstrom is attempting to overcome. Since Billstrom is dealing with stationary subscriber

¹⁰ Col. 3, lines 43 to 46

¹¹ Col. 3, lines 47 to 59

terminals, there is also no "handoff" advantage that would result from the base stations transmitting data at the same time.

Furthermore, in Narashima, the synchronized transmission of data does not cause interference at the mobile device, as in Billstrom. Rather, it is essential in order to preserve cell service when traveling from one cell to another. Therefore, there would be no need to use a process such as that described in Billstrom in combination with the Narashima process.

For at least the foregoing reasons, Applicant submits that it would not have been obvious to combine Billstrom and Narashima (along with Delprat) in the manner suggested in the Office Action. Accordingly, the rejection over Delprat, Billstrom and Narashima is believed to be improper as a matter of law, and withdrawal thereof is respectfully requested. Claim 1 is therefore believed to be allowable.

Amended independent claim 12 also recites plural base stations transmitting channel measurement sequences at substantially constant power levels and at substantially a same time. For at least the reasons explained above with respect to claim 1, claim 12 is also believed to be allowable.

Each of the dependent claims is also believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, all dependent claims have not be discussed specifically herein.

It is believed that all of the pending claims have been addressed. The absence, however, of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or

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other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.


In view of the foregoing remarks, Applicant respectfully submits that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney can be reached the address shown below. All telephone calls should be directed to the undersigned at 617-956-5937.

No fee is believed to be due for this response; however, if any fees are due, please charge them to deposit account 06-1050 referencing Attorney Docket Number 12758-020001.

Respectfully submitted,

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